

Transport GT24

B2881



Service Engineer's Manual

PREFACE

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Version 1.0

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Notice for the USA Compliance Information Statement (Declaration of Conformity Procedure) DoC FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and the receiver.
 - Plug the equipment into an outlet on a circuit different from that of the receiver.

Consult the dealer on an experienced radio/television technician for help.

Notice for Canada

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux normes de Classe B d'interférence radio tel que spécifié par le Ministère Canadien des Communications dans les règlements d'interférence radio.)



Notice for Europe (CE Mark) This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual provides you with instructions on installing your Transport GT24, and consists of the following sections:

- Chapter 1:** Provides an Introduction to the Transport GT24 B2881 bare-bones, packing list, describes the external components, gives a table of key components, and provides block diagrams of the system.
- Chapter 2:** Covers procedures on installing the CPU, memory modules, an optional PCI card, and hard drives.
- Chapter 3:** Covers removal and replacement procedures for pre-installed components.
- Appendix:** Describes the differences between mainboard BIOS and system BIOS. The cable connection tables are also provided for reference of system setup.

Conventions

The following conventions are used in the manual:

Note: Calls attention to important information.



Warning: Provides information to prevent harm to user or damage to equipment.

SAFETY INFORMATION

Before installing and using the Transport GT24, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the Power Company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Table of Contents

Chapter 1: Overview

1.1	About the Transport GT24 B2881	1
1.2	Product Models	2
1.3	Features	3
1.4	Unpacking	5
1.5	About the Product	8
1.5.1	System Front View	8
1.5.2	System Rear View	9
1.5.3	LED Definition	9
1.5.4	System Internal View	11
1.5.5	Motherboard Layout	14
1.5.6	Motherboard Block Diagram	16

Chapter 2: Setting Up

2.0.1	Before You Begin	17
2.0.2	Work Area	17
2.0.3	Tools	17
2.0.4	Precautions	18
2.1	Rack Mounting	19
2.1.1	Installing the Server in a Rack	19
2.2	Installing Motherboard Components	25
2.2.1	Removing the Chassis Cover	25
2.2.2	Installing the CPU, Heatsink and Air Duct	26
2.2.3	Installing the Memory	28
2.2.4	Installing a PCI-X Card	29
2.3	Installing the Hard Drive for B2881G24S4-LC	31
2.4	Installing the Hard Drive for B2881G24S4H/U4H	33
2.5	Installing the Slim FDD (Option)	35
2.6	Installing the Slim CD-ROM or DVD-ROM (for B2881G24S4-LC only)	37

Chapter 3: Replacing Pre-Installed Components

3.1	Introduction	39
3.1.1	Work Area	39
3.1.2	Tools	39
3.1.3	Precautions	39
3.2	Disassembly Flowchart	41
3.3	Removing the Cover	42
3.4	Replacing Motherboard Components	43
3.4.1	Disconnecting All Motherboard Cables	43

3.4.2	Removing the Motherboard	43
3.5	Replacing the LED Control Board	46
3.6	Replacing the M1012 Adapter Board	48
3.6.1	M1012 Adapter Board Features.	49
3.6.2	M1012 Adapter Board Connector Pin Definition	50
3.6.3	System Fan Layout	55
3.7	Replacing the SATA or SCSI Backplane	57
3.7.1	SATA Backplane (M1204) Features	59
3.7.2	SCSI Backplane (M1205) Features	62
3.8	Replacing the Power Supply	66

Appendix I: BIOS Differences

Appendix II: Cable Connection Tables

Technical Support

Chapter 1: Overview

1.1 About the Transport GT24 B2881

Congratulations on your purchase of the TYAN Transport™ GT24 (B2881), a highly-optimized rack-mountable barebone system. The Transport GT24 (B2881) offers the latest in dual processor server systems, providing a rich feature set and incredible performance. Leveraging advanced technology from AMD®, the Transport GT24 (B2881) based server system are capable of offering scalable 32 and 64-bit computing, high-bandwidth memory design, and a lightning-fast PCI-X bus implementation. The Transport™ GT24 (B2881) not only empowers your company in today's demanding IT environment but also offers a smooth path for future application usage.

The Transport™ GT24 (B2881) uses TYAN's latest tooling-made chassis featuring a robust structure, tool-less and modularized design, and a solid mechanical enclosure. All of this provides the Transport™ GT24 (B2881) the power and flexibility to meet the needs of nearly any server application.

1.2 **Product Models**

Model	HDD Bays	Hot-Swap Support	HDD Backplane
B2881G24U4H	Removable, 4 HDDs	Yes	4-port Ultra SCSI
B2881G24S4H	Removable, 4 HDDs	Yes	4-port SATA
B2881G24S4-LC	Internal (Fixed), 4 HDDs	No	None

B2881G24S4H

B2881G24U4H



B2881G24S4-LC



1.3 Features

Enclosure

- Industry 19" rack-mountable 1U chassis storage bay
 - (4) 3.5" HDD bays
 - (1) slim line CD-ROM bay
 - (1) slim line FDD bay
- Dimension: D 25.4 x W 17.17 x H 1.71 inch (645x436x43.6mm)

Processors

- Supports one or two AMD Opteron™ 200 series processors

Chipset

- AMD-8131 Hyper Transport PCI-X tunnel
- AMD-8111 Hyper Transport I/O hub
- Winbond W83627HF super I/O chip
- ADT7463 Hardware Monitor IC

Memory

- Eight 184-pin 2.5-Volt DDR DIMM sockets
- Supports up to 16GB of Registered, ECC DDR400/333 memory

Expansion Slots

- Two 64-bit 133/100MHz (3.3V) PCI-X slots supporting low profile and standard card

Back I/O Ports

- One keyboard & one PS/2 mouse ports
- Two RJ45 10/100/1000 Base-T port with activity LED
- Two USB 2.0 ports
- One 9-pin UART serial port
- One 15-pin VGA port

Front Panel Features

- I/O
 - (2) USB 2.0 ports
- LED indicators
 - Power LED
 - (2) LAN LEDs
 - HDD active LED
- Switches
 - Power switch
 - Reset switch

Networking

- (2) Gigabit Ethernet ports (Broadcom BCM5704 dual port controller) connected to 133MHz PCI-X bus

Video

- ATI RAGE XL PCI graphics controller
- 8MB Frame Buffer of video memory

Integrated Storage Controller

- Model B2881G24S4H/S4-LC
 - Dual channel IDE
 - Silicon Image Si3114 SATA RAID controller, RAID 0, 1, and 10 support
- Model B2881G24U4H
 - Adaptec AIC-7902N dual-channel U320 SCSI
 - SO-DIMM ZCR support

Storage

- SATA version, supports up to 4 internal SATA-1 HDDs
- Optional slim CD-ROM, DVD-ROM and FDD

Motherboard

- Tyan Thunder K8SRE S2881G2NR-BB
- E-ATX footprint (13" x 12")

BIOS

- AMI BIOS 8.0 on 4Mbit LPC flash ROM
- PnP, DMI2.0, WfM2.0 power management
- Power management S1, S4 and S5 support
- ACPI 1.0b & 2.0 support

Server Management

- Automatic fan speed control
- Chassis intrusion alert
- Support Tyan Servr Management (TSM)
- Tyan SMDC* IMPI 1.5 compliant
*remote server management kit (option)

Regulatory

- FCC Class B (Declaration of Conformity)
- CE (Declaration of Conformity)

Power Supply

- EPS 12V, 1U, 500W with PFC
- 100V~240V AC input
-

Environment Temperature

- Operating temperature 5°C~35°C)
- Non-operating temperature -40°C ~ 70°C

1.4 Unpacking

If any items are missing or appear damaged, contact your retailer or browse to TYAN's Web site for service:
<http://www.tyan.com>.

The Web site also provides information on other TYAN products, plus FAQs, compatibility lists, BIOS settings, and more.



1 x Tyan driver CD



SMDC Kit



HDD Screws



Power Cords
Left to right: Europe, US



Mounting Ears & Screws



FDDs

FDD Kit



FDD Cable



FDD Backplane



FDD Backplane Cable



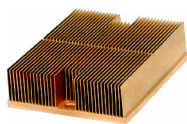
FDD Rails & Screws



Barebone Manual



Mainboard Manual



Heatsink x 2

Rail Kit



Mounting Bracket x 4



Sliding Brackets
Front L-Bracket x 2
Rear L-Bracket x 2



Sliding Rails x 2



Screws Kit

CD-ROM Accessory Kit
(for B2881G24S4-LC only)



CD-ROM Cable



CD-ROM Bracket



CD-ROM Backplane & Screws



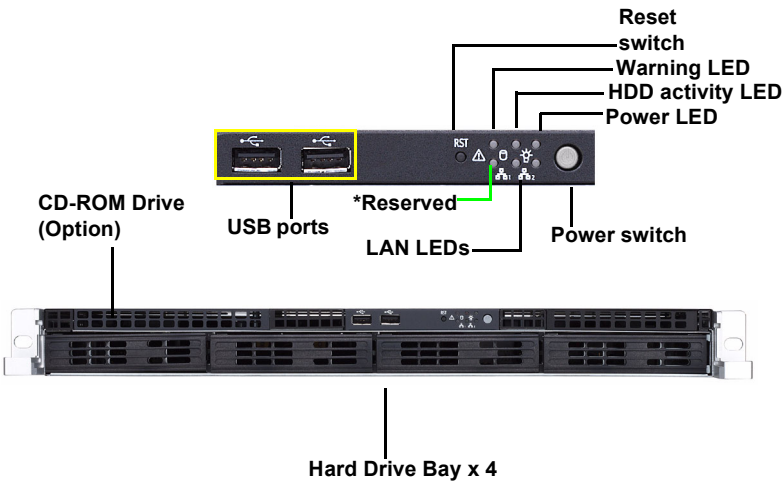
Power Cable

1.5 About the Product

This section contains the hardware diagrams and a block diagram of the GT24 system.

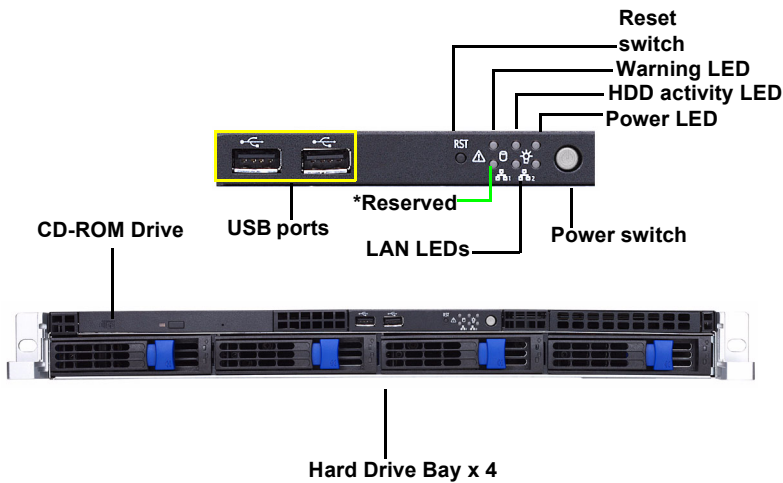
1.5.1 System Front View

B2881G24S4-LC

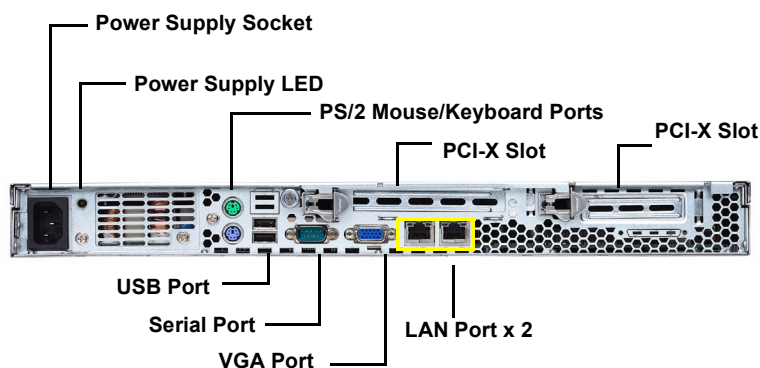


*Reserved: Reserved LED for future upgrade

B2881G24IU4H/B2881G24S4H



1.5.2 System Rear View



1.5.3 LED Definition

Front Panel

LED	Color	State	Description
Power	Green	ON	Power ON
	OFF	OFF	Power OFF
HDD Activity	Amber	Blinking	HDD access activity
	OFF	OFF	No disk activity
LAN1/LAN2 Activity	Green	ON	LAN connected
	Green	Blinking	LAN access activity
	OFF	OFF	LAN disconnected
Warning	Reserved LED for future upgrade. It is not functional in the B2891 barebone now.		
Hot Swappable HDD Tray Power LED	Green	ON	Power connected
	OFF	OFF	Power disconnected
Hot Swappable HDD Tray Access LED (U4H only)	Amber	Blinking	HDD access activity
	OFF	OFF	No disk activity

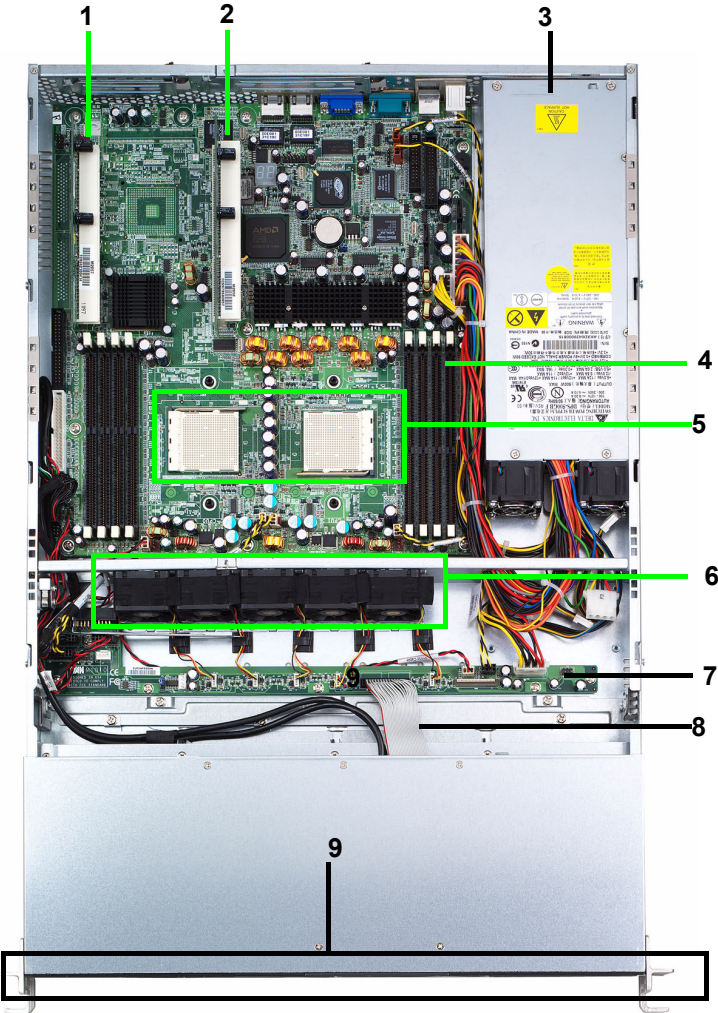
Rear I/O LED

LED	Color	State	Description
RJ45 NIC1 Linkage (Left Side)	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
RJ45 NIC1 Mode (Right Side)	Amber	ON	Gigabit mode
	Green	ON	100M mode
	OFF	OFF	10M mode
RJ45 NIC2 Linkage (Left Side)	Green	ON	LAN linked
	Green	Blinking	LAN accessing
	OFF	OFF	No LAN linked
RJ45 NIC2 Mode (Right Side)	Amber	ON	Gigabit mode
	Green	ON	100M mode
	OFF	OFF	10M mode
Delta Power Supply LED	Green	ON	Output ON and OK
	Green	1Hz Blinking	AC present/Only 5Vsb ON
	Amber	ON	Power supply critical event causing a shutdown: fail- ure, OCP, OVP, fan fail
	Amber	1Hz Blinking	Power supply warning event where the power supply continues to oper- ate: high temp., high power, high current, slow fan
	OFF	OFF	No AC power

NOTE: “Right” or “Left” is viewed from the rear.

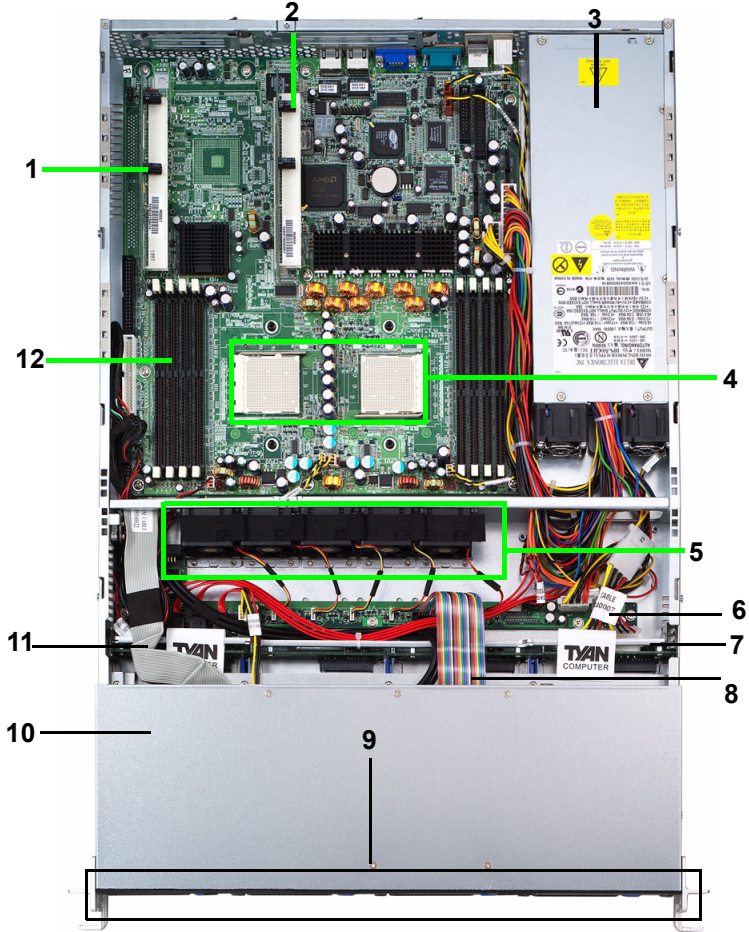
1.5.4 System Internal View

B2881G24S4-LC



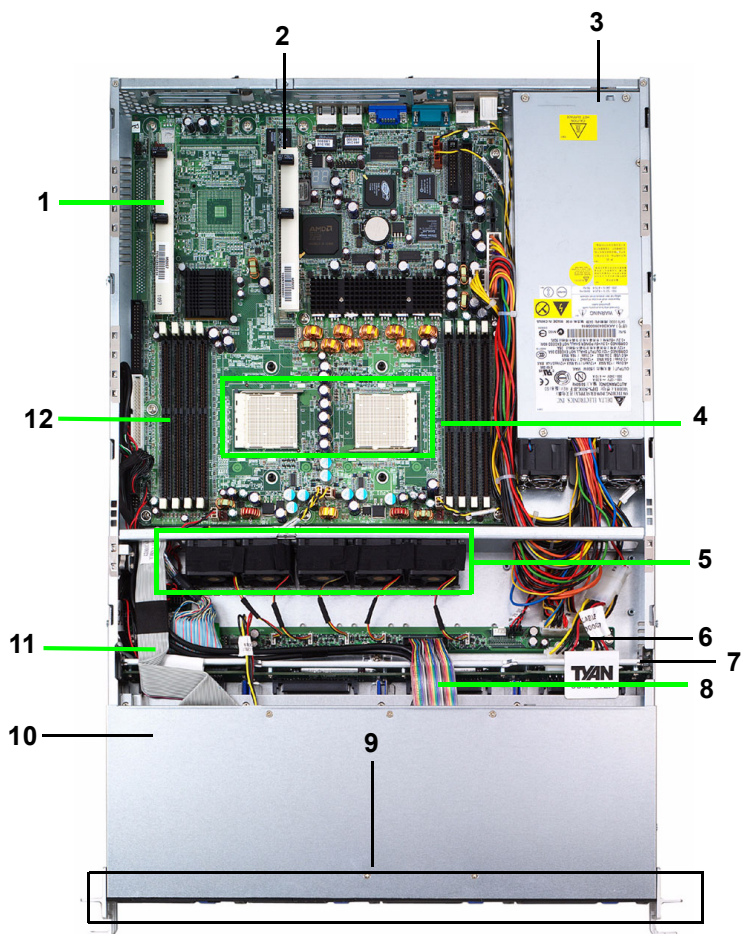
- | | |
|---------------------------------------|--|
| 1. PCI-X Slot (with riser card M2057) | 6. System Fans (Left to right: FAN5, FAN4, FAN3, FAN2, FAN1) |
| 2. PCI-X Slot (with riser card M2052) | 7. M1012 Adapter Board |
| 3. EPS 12V Power Supply | 8. Front Control Board Cable |
| 4. Memory Slots | 9. Four Internal HDD trays |
| 5. CPU Sockets | |

B2881G24S4H



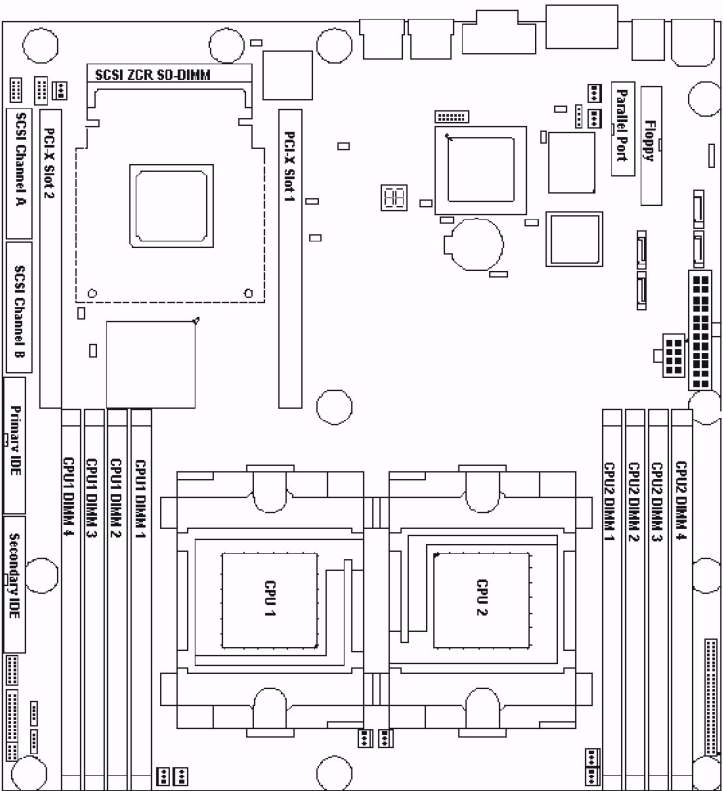
- | | |
|--|----------------------------|
| 1. PCI-X Slot (with riser card M2057) | 7. SATA Backplane |
| 2. PCI-Slot (with riser card M2052) | 8. LED Control Board Cable |
| 3. EPS 12V Power Supply | 9. Four SATA HDDs |
| 4. CPU Sockets | 10. Slim CD-ROM |
| 5. System Fans (Left to right: FAN5, FAN4, FAN3, FAN2, FAN1) | 11. CD-ROM Cable |
| 6. Adapter Board | 12. Memory Slots |

B2881G24U4H



1. PCI-X Slot (with riser card M2057)
2. PCI-X Slot (with riser card M2052)
3. EPS 12V Power Supply
4. CPU Sockets
5. System Fans (Left to right: FAN5, FAN4, FAN3, FAN2, FAN1)
6. Adapter Board
7. SCSI Backplane
8. LED Control Board Cable
9. Four SCSI HDDs
10. Slim CD-ROM
11. CD-ROM Cable
12. Memory Slots

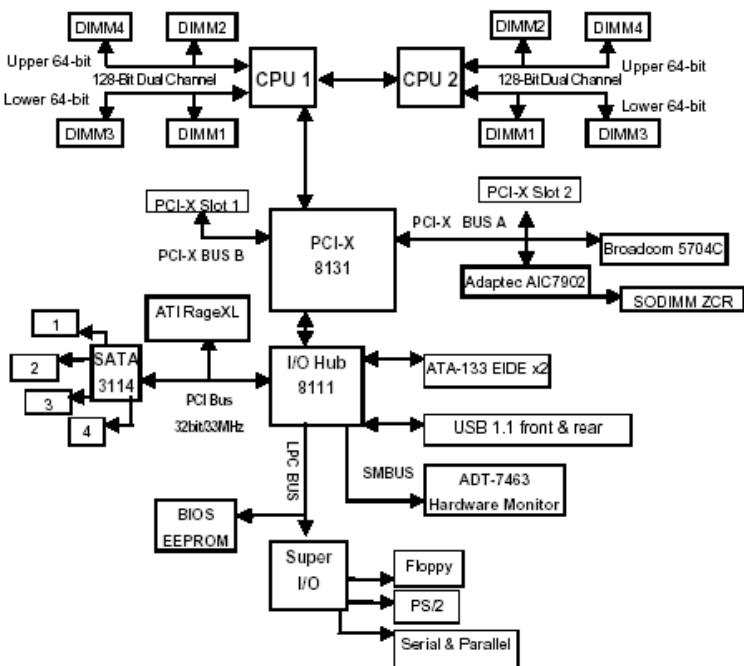
1.5.5 Motherboard Layout



Jumpers & Connectors

Jumper	Function
J4	SMBus 1.1 Connector
J14	Onboard Buzzer/Speaker Header
J25	USB Front Panel Header
J34	Clear CMOS Jumper
J42	COM2 Header
J53	PCI-X Slot 1 Bus Speed Override
J76	SMDC Header
J73/J75	Front Panel LAN LED Headers
J77	INTR-Chassis Intrusion Header
J85	ATI Video Disable Jumper
J86	Front Panel Header
J87	Gigabit Ethernet Disable Jumper
J92	PCI-X Slot 2 Bus Speed Override
J102	SATA Controller Disable Jumper
J11	SCSI Controller Disable Jumper (optional)
J103/J104/J110/ J89/J90	Reserved for OEM only

1.5.6 Motherboard Block Diagram



Chapter 2: Setting Up

2.0.1 Before You Begin

This chapter explains how to install the CPU, CPU heatsink, memory modules, and hard drives. Instructions on inserting a PCI card are also given.

Take note of the precautions mentioned in this section when installing your system.

2.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

2.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

2.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the Transport GT24 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Notes:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

2.1 Rack Mounting

After installing the necessary components, the Transport GT24 can be mounted in a rack using the supplied rack mounting kit.

Rack mounting kit

Sliding Rails x 2:

Sliding Brackets x 4 (Front x 2, Rear x 2)

Mounting Ears x 2

Screws Kit x 1

Mounting Brackets x 4

2.1.1 Installing the Server in a Rack

Follow these instructions to mount the Transport GT24 into an industry standard 19" rack.

NOTE: Before mounting the Transport GT24 in a rack, ensure that all internal components have been installed and that the unit has been fully tested.

Screws List (including screws for SMDC)

A: Flat 6#-32 x4~x16

B: B-type 6#-32 x4

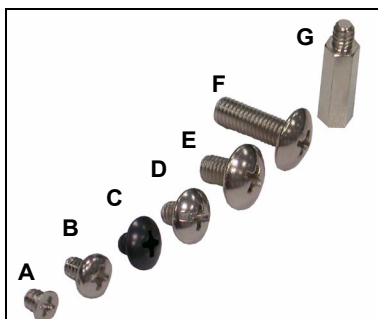
C: M4-4L x8

D: M4-5L x4

E: M4-8L x8

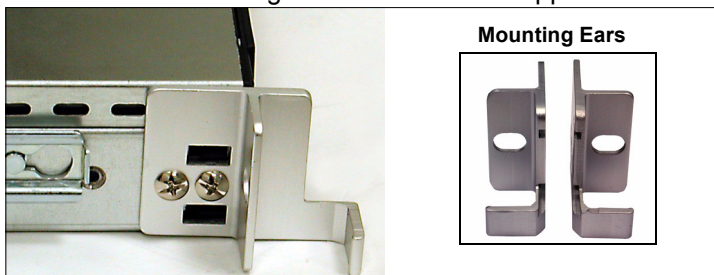
F: M4-15L x2

G: 13.5mm stand-off x1

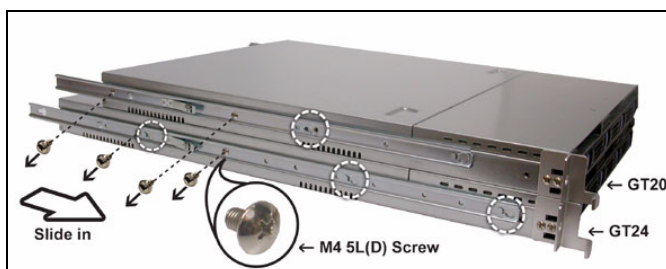


Installing the Inner Rails to Chassis

1. Screw the mounting ear to each side of Transport GT24 as shown using 2 screws from the supplied screws kit.

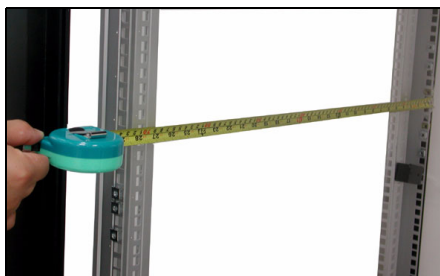


2. Draw out the inner rails from rail assembly. Install inner rails to left and right sides of chassis using 2 M4-5L(D) screws for each side.

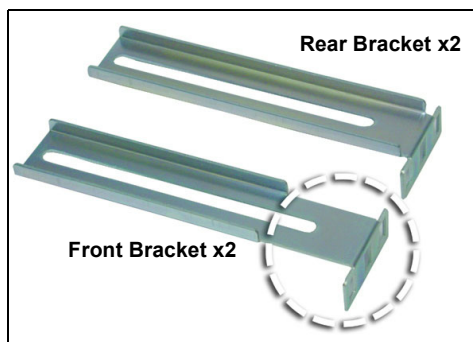


Installing Outer Rails to the Rack

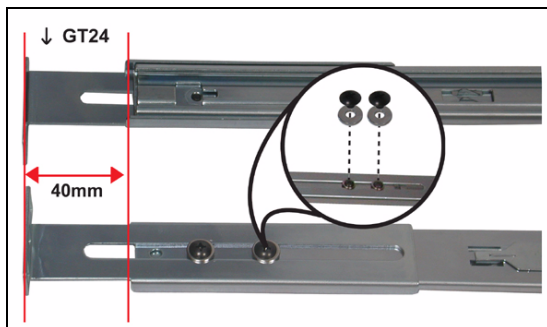
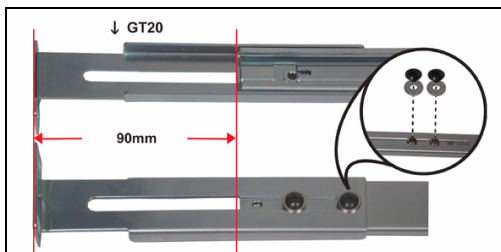
3. Measure the distance between inner side of the front and rear mounting brackets in the rack.



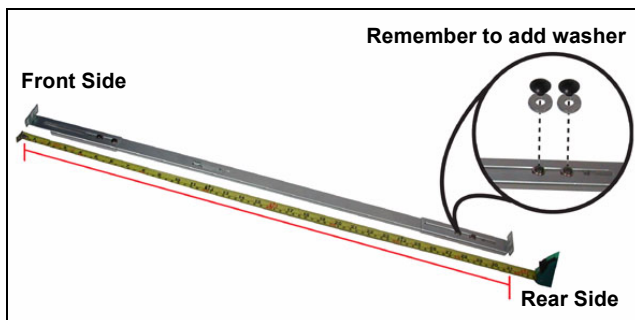
4. Locate the front and rear brackets.



5. Reserve 90mm for GT20 or 40mm for GT24 on the front bracket. Secure the front bracket to outer rail with 2 M4-4L(C) screws.



6. Reserve the distance same as in Step 2 on rear bracket. Secure the rear bracket to outer rail with 2 M4-4L(C) screws.

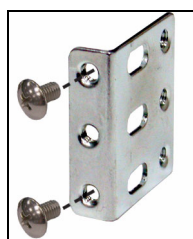


7. Secure the outer rail to the rack using 2 brackets and 4 M4-8L(E) screws for each side (A). Secure the mounting brackets from inside, not outside, of the rack (B).

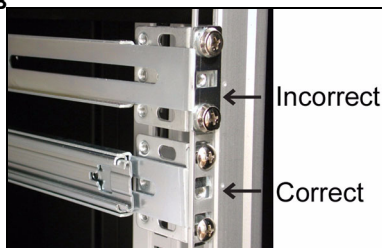
A



Mounting Bracket

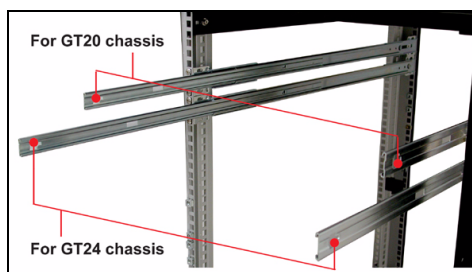


B

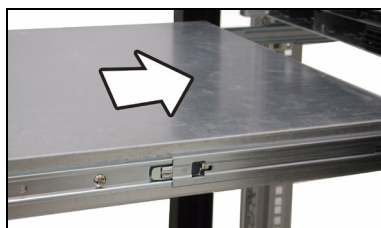


Rackmounting the Server

8. Draw out the middle rail to the latch position.

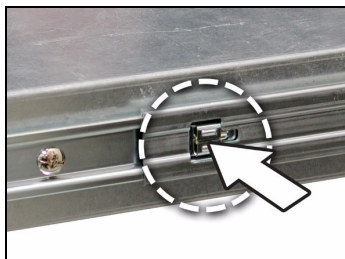


9. Lift the chassis and then insert the inner slide rails into the middle rails.



10. Push the chassis in and press the latch key (A). Then push the whole system into the rack (B).

A



B



11. Secure the mounting ears of chassis to the rack with 2 M4-15L(F) screws.



NOTE: To avoid injury, it is strongly recommended that two people lift the Transport GT24 into the place while a third person screws it to the rack.

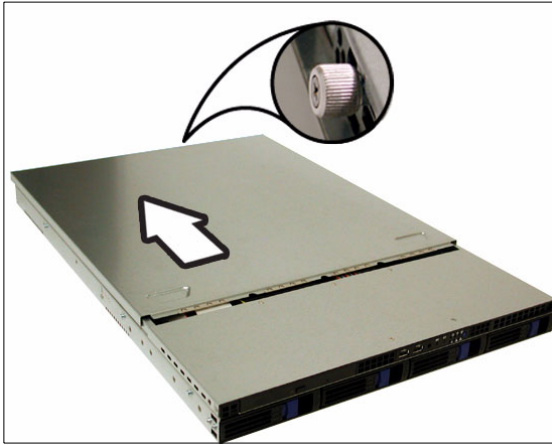
2.2 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPU, memory modules and PCI card.

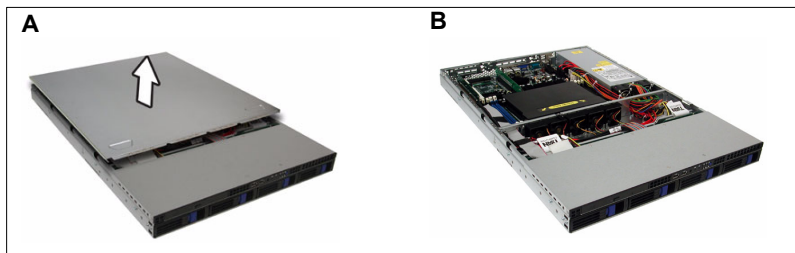
2.2.1 Removing the Chassis Cover

Follow these instructions to remove the Transport GT24 chassis cover.

1. Release the screw on the back side. Then slide the chassis cover in the direction of arrow.



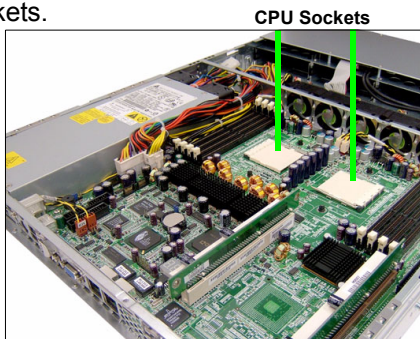
2. Lift the cover off.



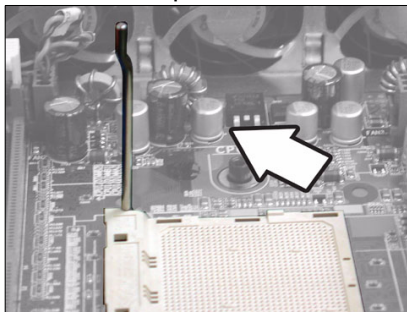
2.2.2 Installing the CPU, Heatsink and Air Duct

Follow these instructions to install the CPU, CPU heatsink and air duct.

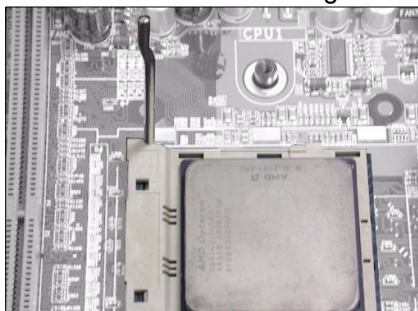
1. After removing the pre-installed air duct, locate the CPU sockets.



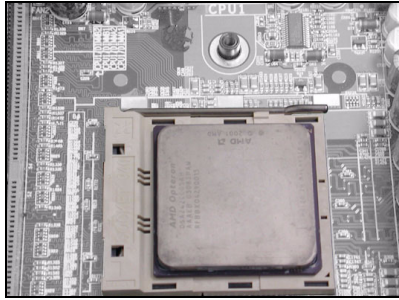
2. Pull the CPU lever up to unlock the CPU socket.



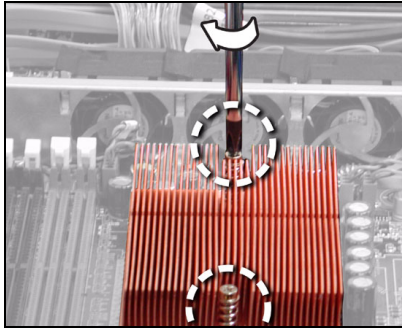
3. Place the CPU in the CPU socket, ensuring that pin 1 is located as shown in the following illustration.



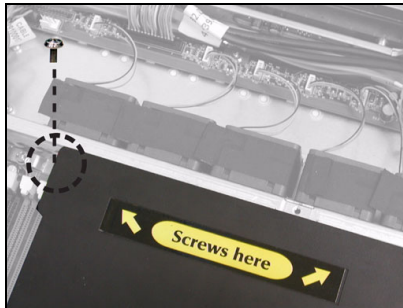
4. Press the CPU socket lever down in the direction shown to secure the CPU.



5. Align the heatsink screw holes with the holes on the motherboard and insert two heatsink screws as shown.



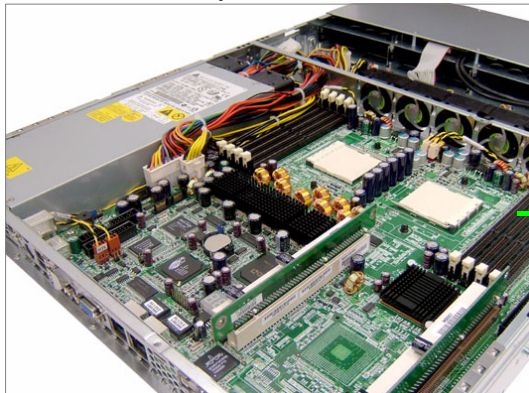
6. Replace the air duct over the heatsink and secure the heatsink with two screws.



2.2.3 Installing the Memory

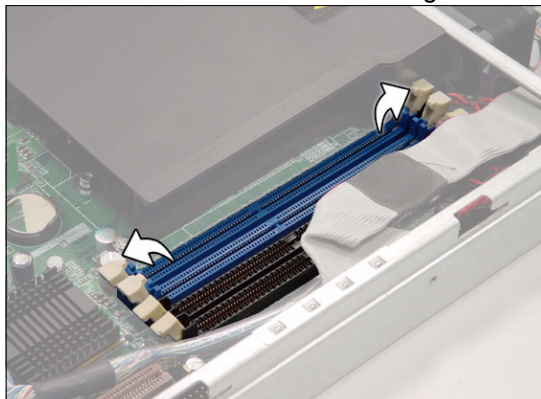
Follow these instructions to install the memory modules on the motherboard.

1. Locate the memory slots on the motherboard.



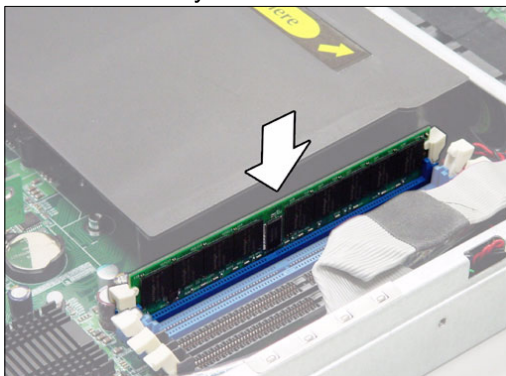
Memory Slots

2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



3. Align the memory module with the slot. The module has indentations that align with notches in the slots.

4. Insert the memory module into the slot as shown.

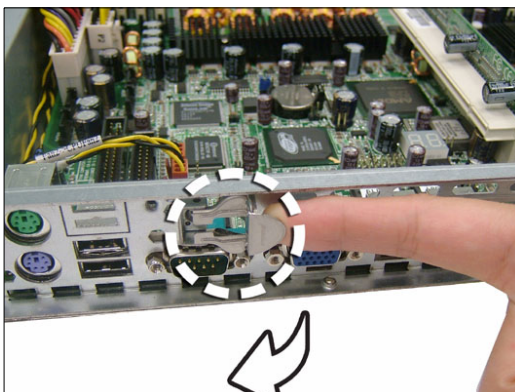


When inserted properly, the memory slot locking levers lock automatically onto the indentations at the ends of the module.

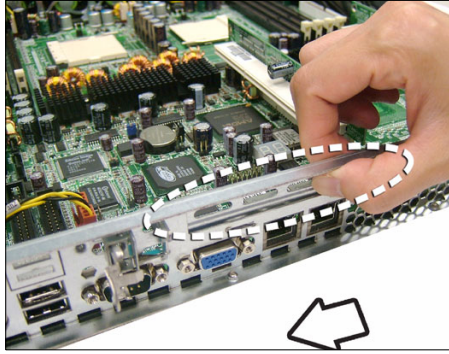
2.2.4 Installing a PCI-X Card

There are two PCI-X slots on the rear panel of GT24. Refer to the procedures below for PCI-X installation.

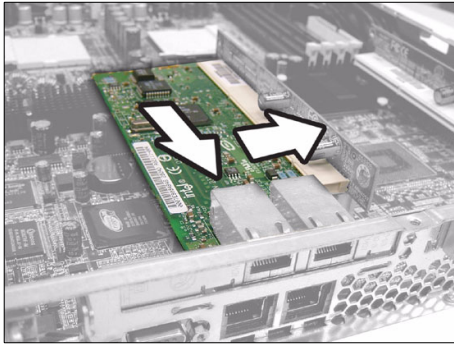
1. Push the tab of PCI-X slot on the rear panel in the direction as shown to release the bracket.



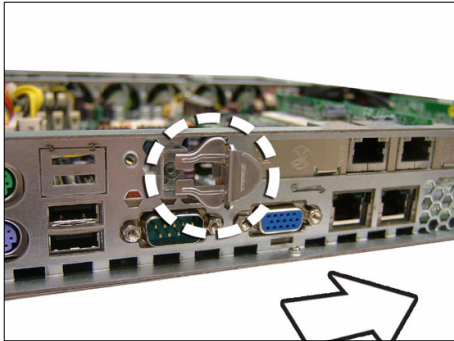
2. Move the bracket to left as shown.



3. Insert the PCI-X card as shown.



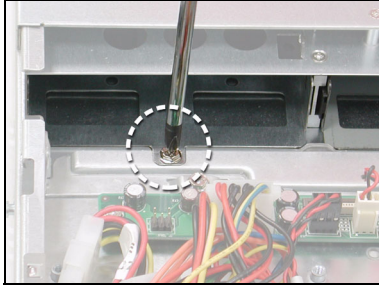
4. Push the tab of PCI-X slot in the direction as shown to fix PCI-X card.



2.3 Installing the Hard Drive for B2881G24S4-LC

Follow these instructions to install a SATA hard drive for model B2881G24S4-LC.

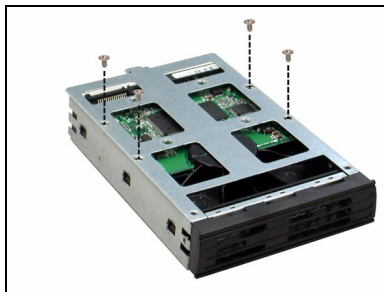
1. Remove the screw to release the hard drive tray.



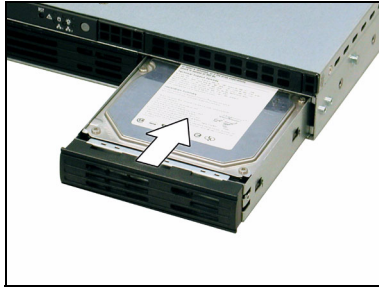
2. Slide the drive tray out.



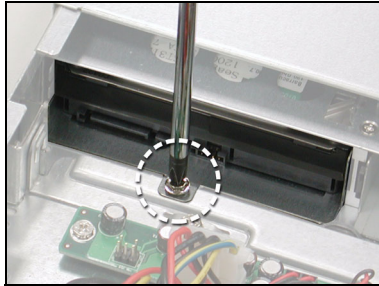
3. Place a hard drive into the drive tray and then secure the hard drive using 4 screws.



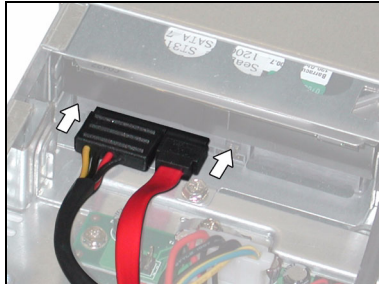
4. Insert the hard drive tray into the bay.



5. Secure the HDD using a screw.



6. Connect the data and power cables.



2.4 Installing the Hard Drive for B2881G24S4H/U4H

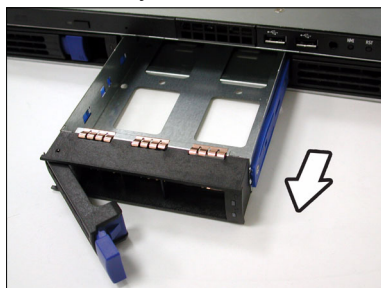
The Transport GT24 barebone system supports Serial ATA and SCSI hard drives.

Follow these instructions to install a SATA or SCSI hard drive for model B2881G24U4H/B2881G24S4H.

1. Press the locking lever latch in the direction of arrow (A) and then pull the locking lever open (B).



2. Slide the drive tray out.



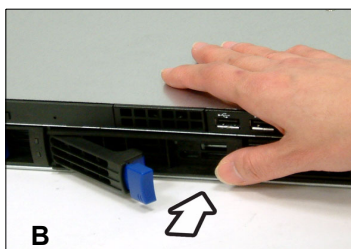
3. Place a hard drive into the drive tray.



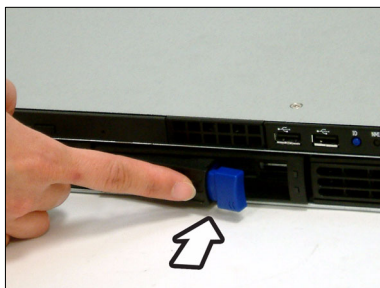
4. Using 4 HDD screws to secure the HDD.



5. Reinsert the drive tray into the chassis (A), ensuring that the drive tray is completely inserted into the chassis (B).



6. Pressing the locking lever to secure the hard drive tray.



2.5 Installing the Slim FDD (Option)

1. Locate the two FDD rails and screws from the FDD kit. Secure the two rails to FDD using four screws.

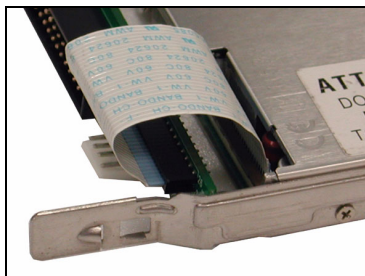
FDD Rails & Screws



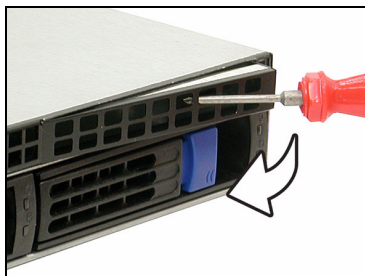
2. Connect the FDD backplane to FDD using 2 screws.



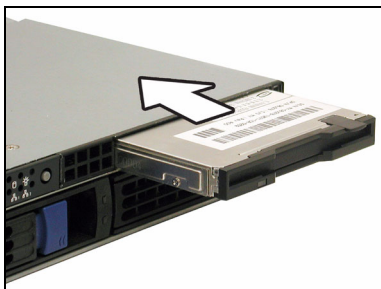
3. Connect the FFC cable to FDD.



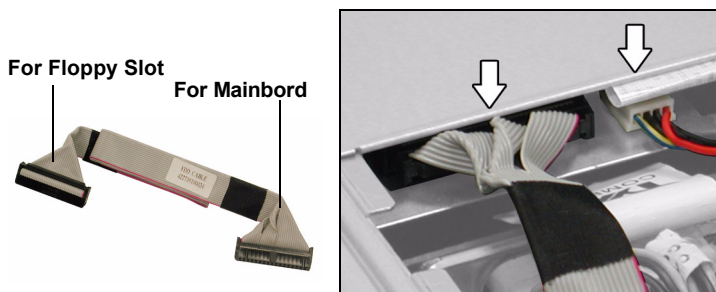
4. Using a screw driver to pull open the door of FDD tray.



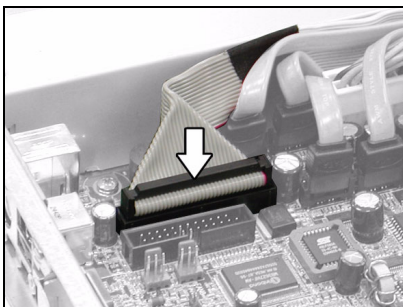
5. Insert FDD module into the tray.



6. Locate the FDD cable from FDD kit. Connect the wrinkle side to the connector on floppy slot. Refer to the picture below for the correct direction. Then, connect the power cable of FDD to the connector on floppy slot.



7. Connect the other side to the connector on motherboard.



2.6 Installing the CD-ROM or DVD-ROM (for B2881G24S4-LC only)

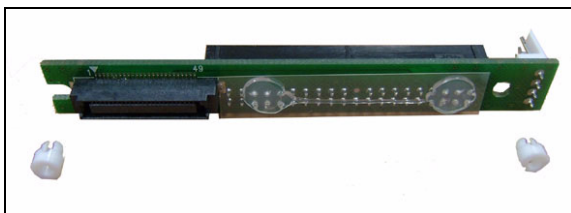
Follow these instructions to install the slim CD-ROM.

1. Use a screw driver to pull open the door of CD-ROM drive bay.



2. Before connecting the CD-ROM backplane to CD_ROM drive, first connect the two white buffers to the backplane with 2 screws (A). Then, secure the CD-ROM backplane to CD-ROM drive with 2 screws provided (B).

A



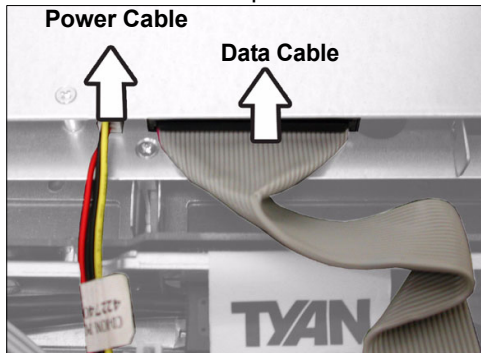
B



3. Insert the CD-ROM drive into the chassis



4. Connect the CD-ROM power and data cables.



Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace pre installed components including the motherboard, LED control board, HDD, and CD-ROM drive.

Take note of the precautions in this section when installing your system.

3.1.1 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers keeps them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

3.1.2 Tools

The procedures that follow require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected using your fingers. It is recommended that you do not use needle-nosed pliers to remove connectors as these can damage the soft metal or plastic parts of the connectors.

3.1.3 Precautions

Components and electronic circuit boards can be damaged by static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to the Transport GT24 or injury to yourself.

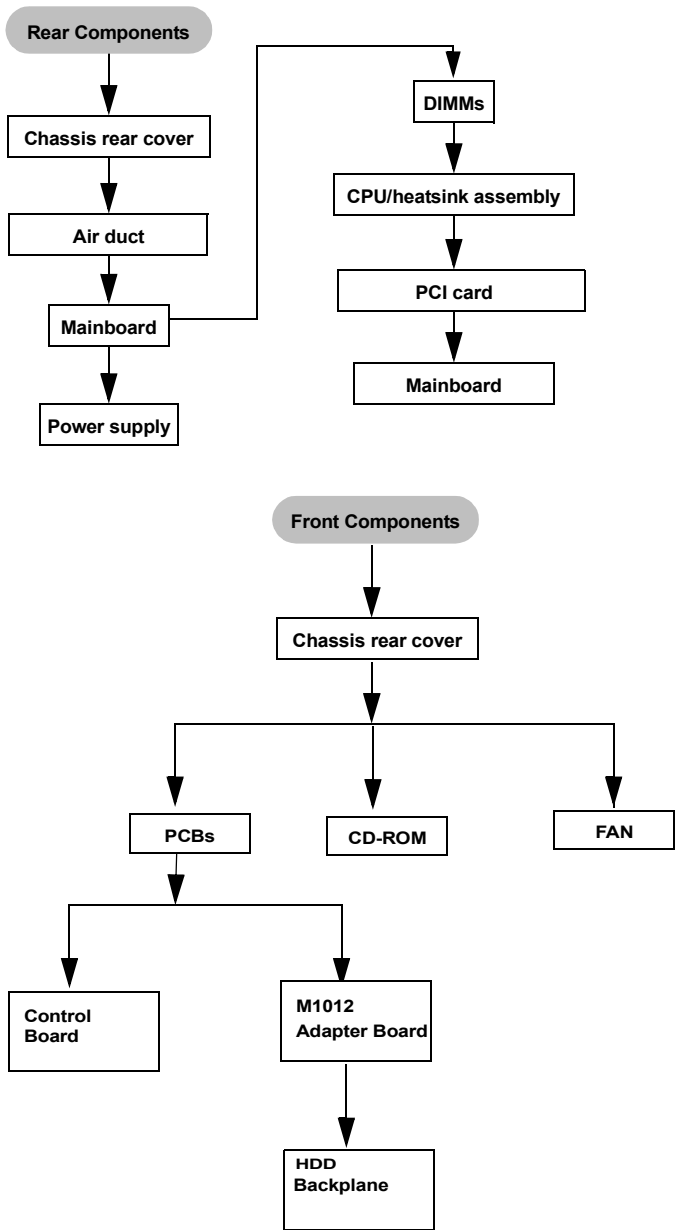
- Ground yourself properly before removing the top cover of the system. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.

Notes:

- All connectors are keyed to only attach one way.
- Always use the correct screw size as indicated in the procedures.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.

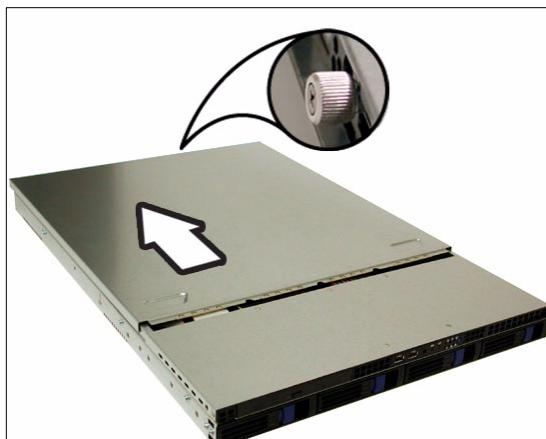


3.3 Removing the Cover

Before replacing any parts you must remove the chassis cover.

Follow these instructions to remove the cover of the Transport GT24 chassis cover.

1. Release the screw and then slide the cover in the direction of arrow.



2. Lift the cover in the direction of arrow (A).

A



B



3.4 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

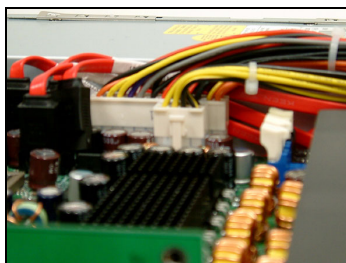
3.4.1 Disconnecting All Motherboard Cables

Before replacing the motherboard or certain components, remove cables connected to the motherboard. Follow these instructions to remove all motherboard cabling.

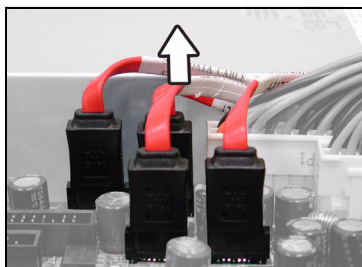
1. Disconnect ATX power cables

Main Power

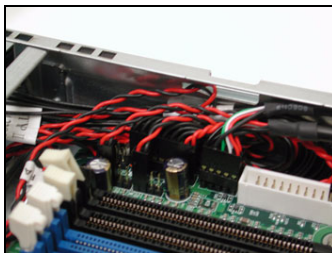
EPS 12V Power



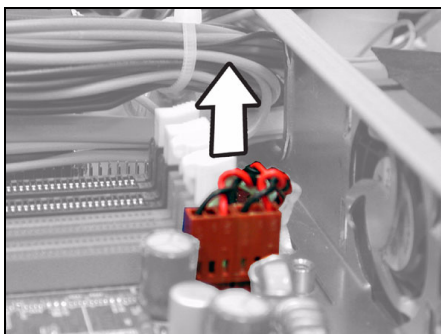
2. Disconnect CD-ROM drive cable and SATA (or SCSI) hard drive cables.



3. Disconnect the front panel, USB, and two LAN connectors. Refer to the mainboard layout for the locations.



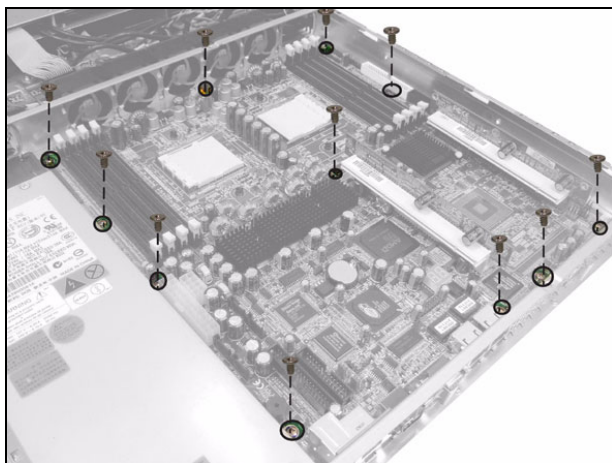
4. Disconnect all fan power cables.



3.4.2 Removing the Motherboard

Follow these instructions to remove the motherboard from the chassis when all add-on components have been removed.

1. Remove the eleven screws securing the motherboard to the chassis.

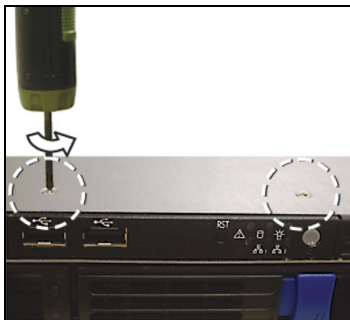


2. Remove the motherboard.

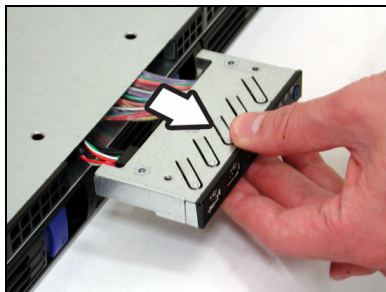
3.5 Replacing the LED Control Board

Follow these instructions to remove the LED control board.

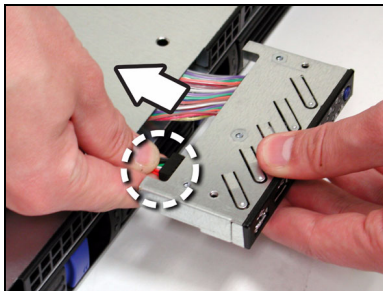
1. Remove the 2 screws securing the LED control board to the chassis.



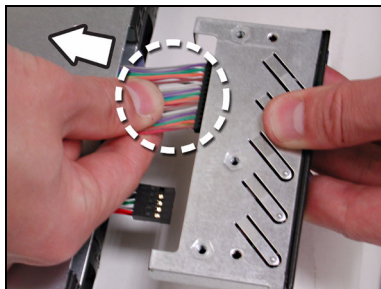
2. Pull the LED control board free from the chassis as shown below.



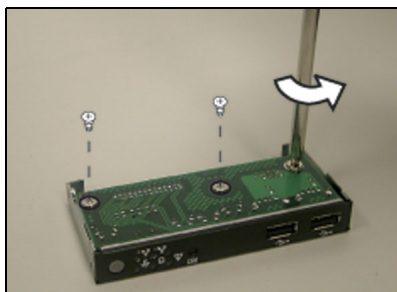
3. Unplug the front panel ribbon cable from the connector.



4. Unplug the USB cable from the connector.



5. Remove the three screws securing the LED control board to the bracket

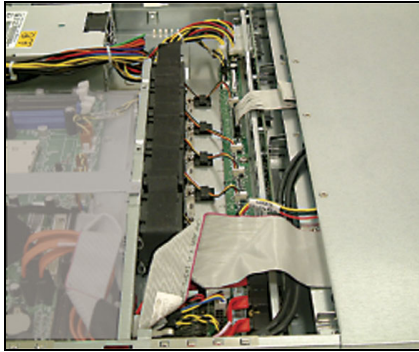


6. Release the LED control board from the chassis. After replacement, insert and secure the unit to the chassis following the reverse procedures from step 1~5.

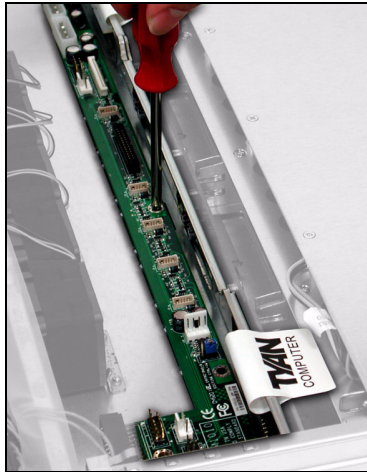


3.6 Replacing the M1012 Adapter Board

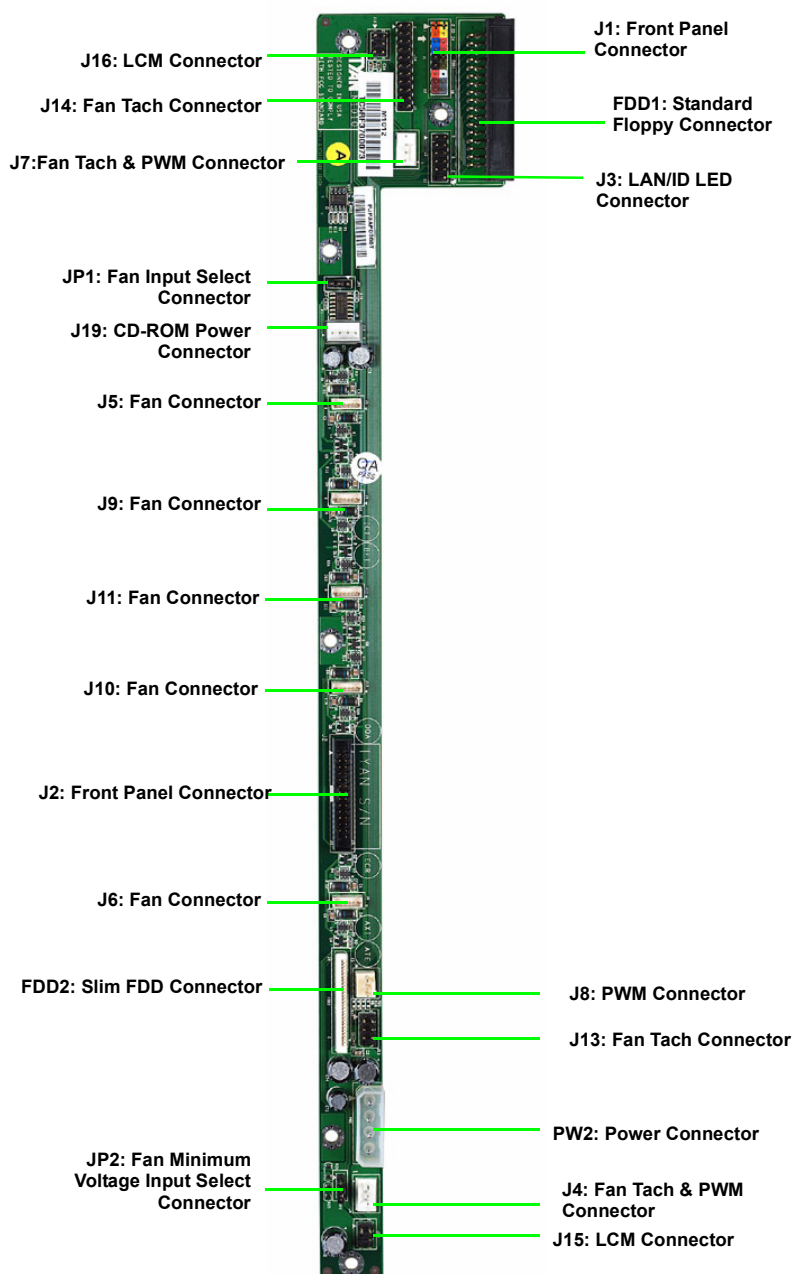
1. Remove all the cables connected to the adapter board, including front panel, USB, LAN, power and five fan cables.



2. Remove the five screws to release the adapter board. Refer to page 49 for the location.



3.6.1 M1012 Adapter Board Features



3.6.2 M1012 Adapter Board Connector Pin Definition

J1 TYFP Front Panel Connector

1	HDLED+	2	PW_LED+
3	HDLED -	4	PW_LED -
5	RESET-	6	PWR_SW+
7	RESET+	8	PWR_SW -
9	VOLTAGE5	10	WLED+
11	EXT_INT	12	WLED-
13	V5SB	14	KEY PIN
15	ICH_SMBDAT	16	GND
17	ICH_SMBCLK	18	INTRU#

J2 Front Panel Connector

1	HDLED+	2	HDLED-
3	RESET+	4	RESET-
5	PW_LED+	6	PW_LED-
7	WLED+	8	WLED -
9	ICH_SMBDAT	10	ICH_SMSCLK
11	EXT_INT	12	VOLTAGE5
13	V5SB	14	INTRU#
15	PWR_SW+	16	PWR_SW-
17	LAN1_LED+	18	LAN1_LED -
19	LAN2_LED+	20	LAN2_LED-
21	LAN3_LED+	22	LAN3_LED-
23	ID_LED+	24	ID_LED-
25	ID_SW+	26	ID_SW-
27	KEY PIN	28	NC

J3 LAN/ID LED Connector

1	LAN1_LED+	2	LAN1_LED-
3	LAN2_LED+	4	LAN2_LED-
5	LAN3_LED+	6	LAN3_LED-
7	ID_LED+	8	ID_LED-
9	ID_SW+	10	ID_SW-
11	KEY PIN	12	NC

FAN Signal Related Connector Pin Definition

NOTE: The FAN signal naming is based on HW circuit design only. It might be different from the system fan naming.

J4 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN1_TACH
4	PWM1 (Default)

J7 Fan TACH & PWM Connector

1	GND
2	NC
3	FAN7_TACH
4	PWM1 (Default)

J8 PWM Connector

1	GND
2	PWM2
3	FAN1_TACH

J13 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	KEY PIN	8	NC

J14 Fan TACH Connector

1	GND	2	FAN1_TACH
3	GND	4	FAN2_TACH
5	GND	6	FAN3_TACH
7	GND	8	FAN4_TACH
9	GND	10	FAN5_TACH
11	GND	12	FAN6_TACH
13	GND	14	FAN7_TACH
15	GND	16	FAN8_TACH
17	GND	18	FAN9_TACH
19	GND	20	FAN10_TACH
21	KEY PIN	22	NC

J6 Fan Connector

1	FAN1_12VPWM
2	FAN1_TACH
3	GND
4	GND
5	FAN2_TACH
6	FAN2_12VPWM

J10 Fan Connector

1	FAN3_12VPWM
2	FAN3_TACH
3	GND
4	GND
5	FAN4_TACH
6	FAN4_12VPWM

J11 Fan Connector

1	FAN5_12VPWM
2	FAN5_TACH
3	GND
4	GND
5	FAN6_TACH
6	FAN6_12VPWM

J9 Fan Connector

1	FAN7_12VPWM
2	FAN7_TACH
3	GND
4	GND
5	FAN8_TACH
6	FAN8_12VPWM

J5 Fan Connector

1	FAN9_12VPWM
2	FAN9_TACH
3	GND
4	GND
5	FAN10_TACH
6	FAN10_12VPWM

J15 & J16 LCM Connectors

1	LCM_+5V	2	LCM_SIN
3	KEY PIN	4	GND
5	LCM_+5VSB	6	LCM_SOUT

JP1 Fan Input Select Connector

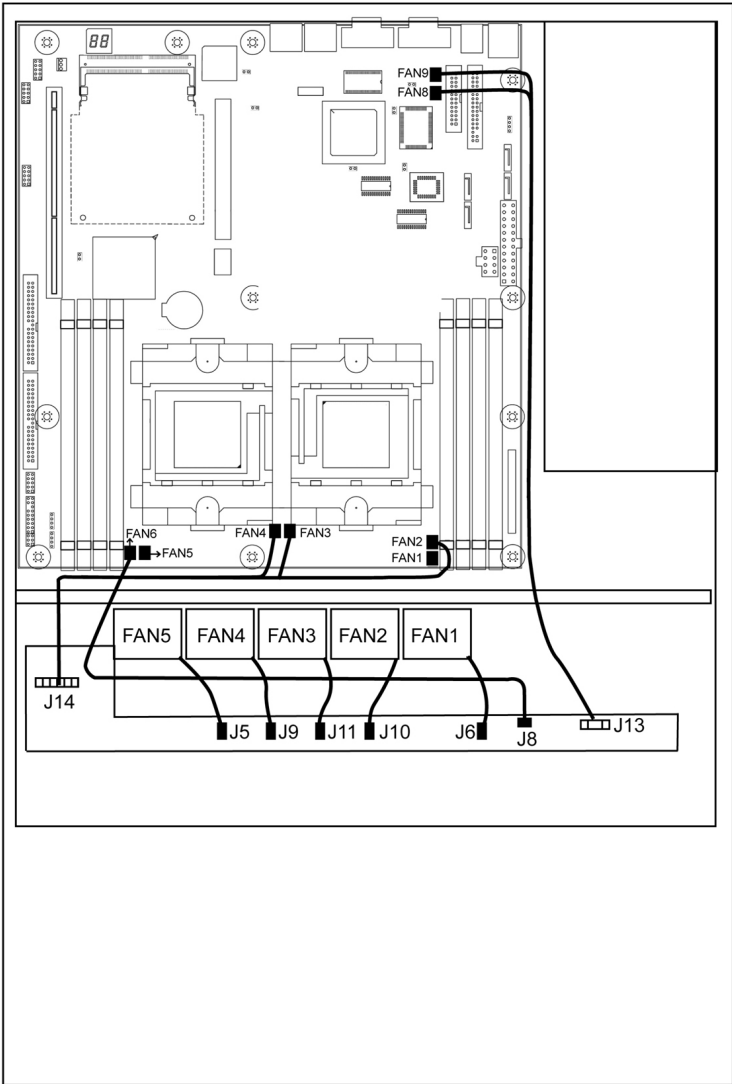
Pin1 & Pin2 Close	Fan PWM signal from J8
Pin2 & Pin3 Close	Fan PWM signal from J4, J7 & J14 (Default)

JP2 Fan Input Select Connector

Pin1 & Pin2 Close	0V
Pin2 & Pin3 Close	+5V (Default)

3.6.3 System Fan Layout

The following picture provides the information for system fan layout. Refer to the tables on p.56 for connection.



System Fan Speed Control Signal

M1012 Adapter Board	Connect to	Motherboard
J8 PWM Connector	→	FAN6 Connector

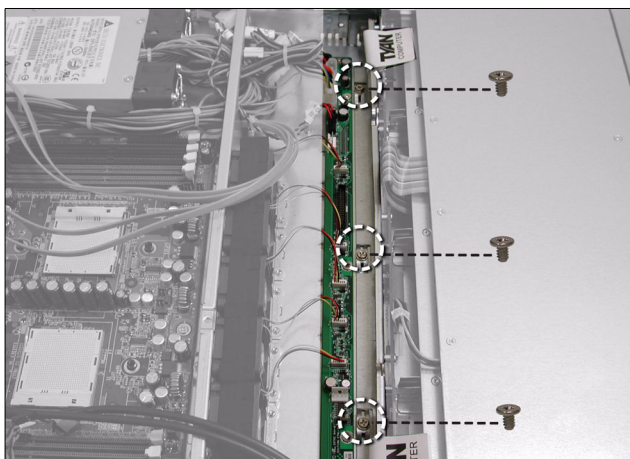
System Fan Monitoring Signal

Barebone System Fan	Connect to	Motherboard Fan
Fan 1 (Fan J13)	→	Fan 8
Fan 2 (Fan J13)	→	Fan 9
Fan 3 (Fan J14)	→	Fan 3
Fan 4 (Fan J14)	→	Fan 4
Fan 5 (Fan J14)	→	Fan 2

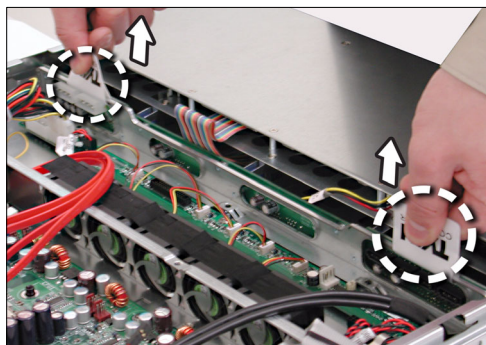
3.7 Replacing the SATA or SCSI Backplane

NOTE: The procedures for replacing SATA or SCSI backplanes are the same. The following section applies to B2891G24S4H model only. You may refer to the following section for SCSI backplane replacement.

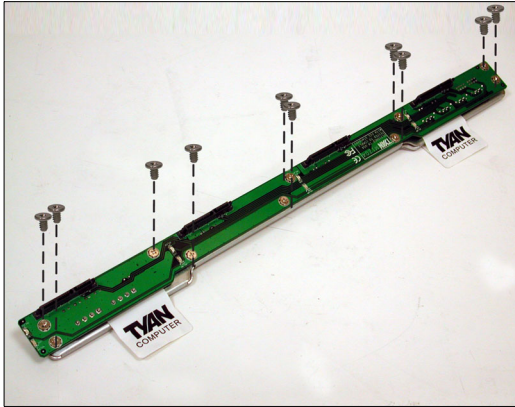
1. Remove the 3 screws securing the adapter board to the chassis.



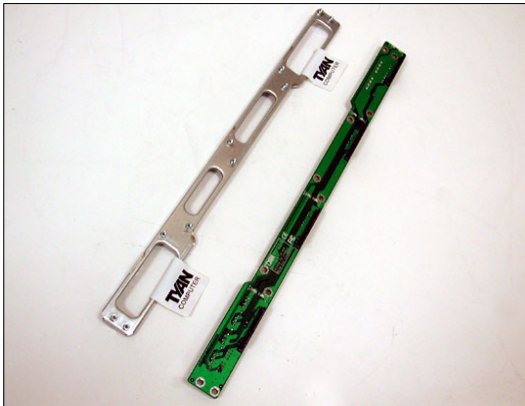
2. Grab the two lables to lift the adapter board.



3. Remove the ten screws that secure the bracket to the adapter board.

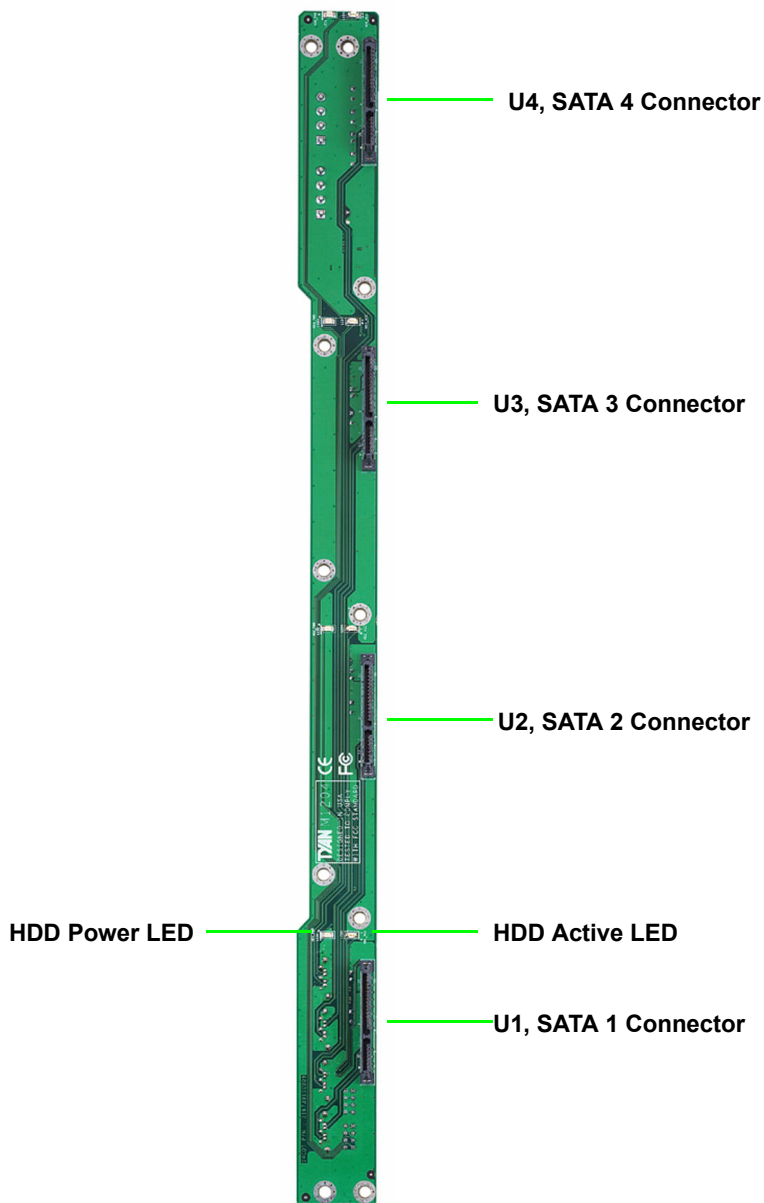


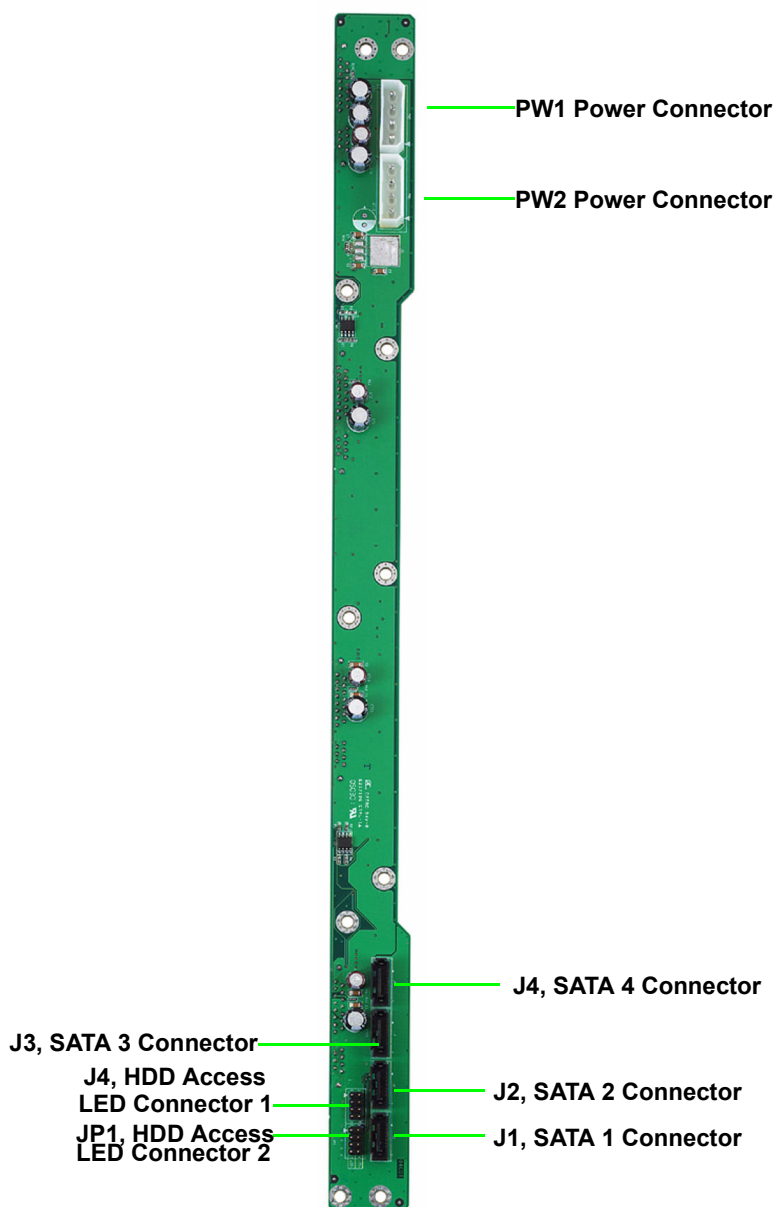
4. Release the adapter board free from the bracket.



5. Replace the unit to the chassis following the reverse procedures from step 1 to 4 after done.

3.7.1 S-ATA Backplane (M1204) Features





M1204 HDD Access LED Connector Pin Definition

J4: HDD Access LED Connector

1	HD_ACCLED1+	2	HD_ACCLED1_N
3	HD_ACCLED2+	4	HD_ACCLED2_N
5	HD_ACCLED3+	6	HD_ACCLED3_N
7	HD_ACCLED4+	8	HD_ACCLED4_N

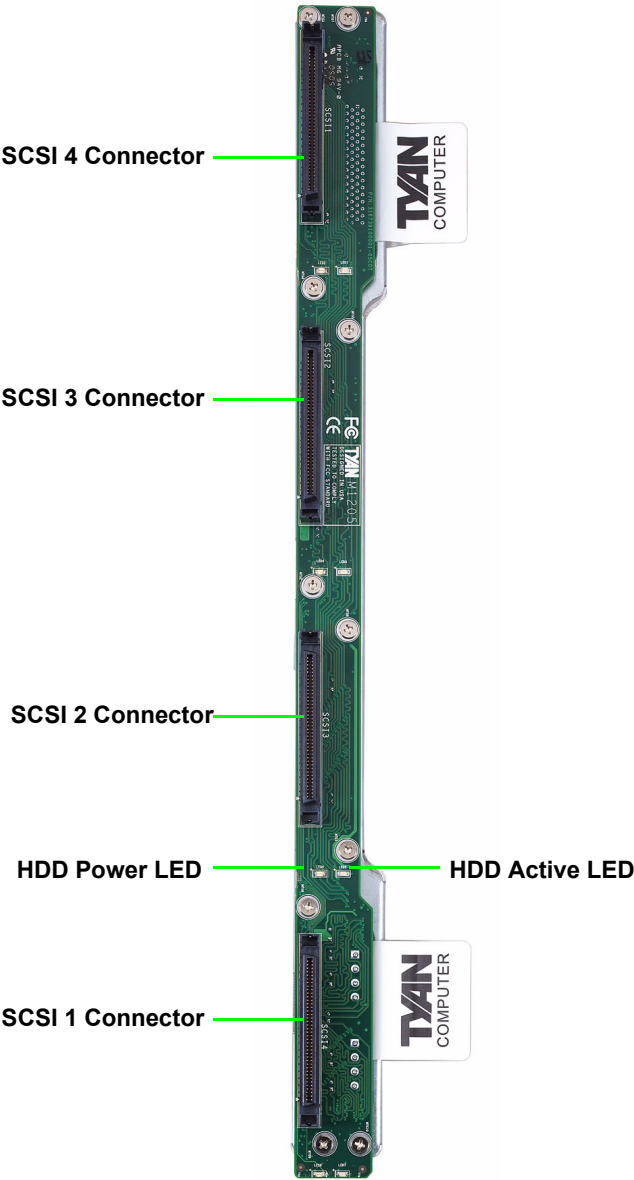
NOTE: This is a normal HDD access LED connector. It just passes through the LED signal from SATA controller.

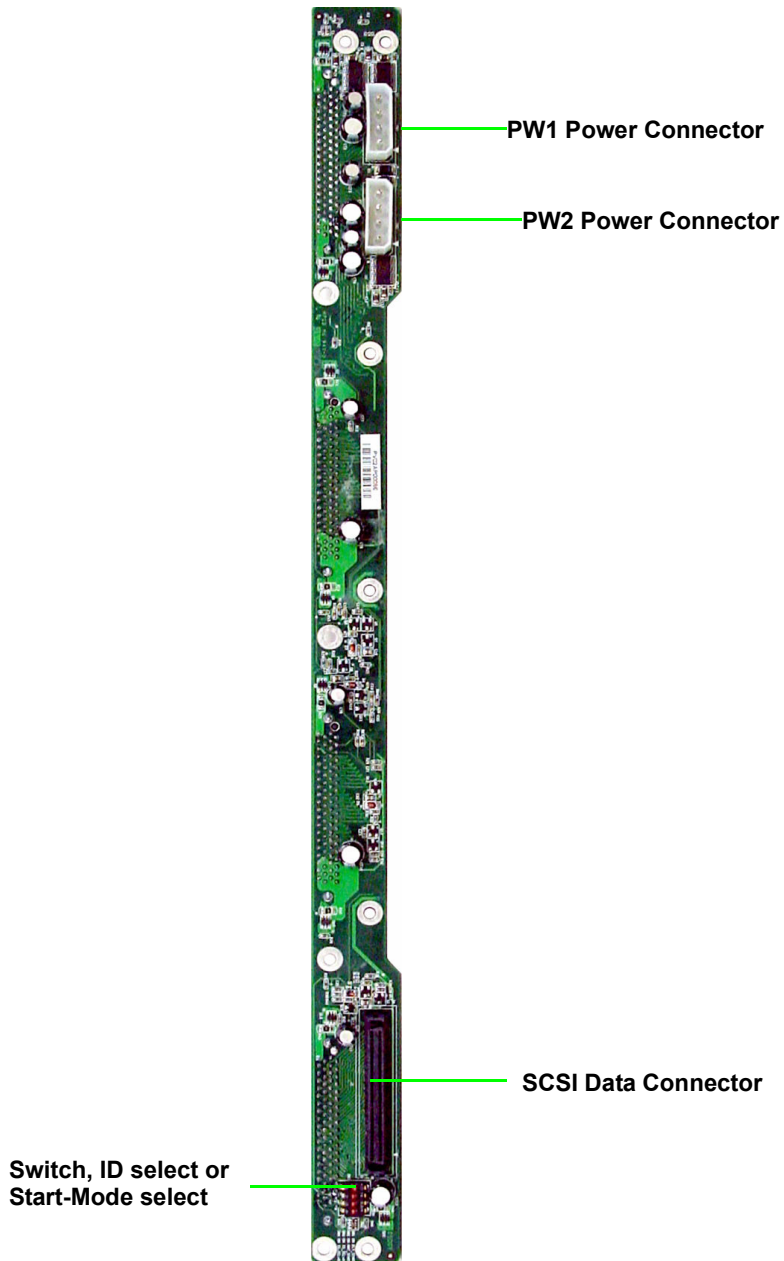
JP1: HDD Access LED Connector

1	HD_ACCLED1+	2	HD_ACCLED1-
3	HD_ACCLED2+	4	HD_ACCLED2-
5	HD_ACCLED3+	6	HD_ACCLED3-
7	HD_ACCLED4+	8	HD_ACCLED4-

NOTE: This is a HDD access LED connector with reverse signal circuit design. It is for some special LED signal requirement of SATA controller.

3.7.2 SCSI Backplane (M1205) Features





M1205 HDD Start-Mode & ID Selection Switch

SW1 & SW2 HDD Start-Mode Selection Switch

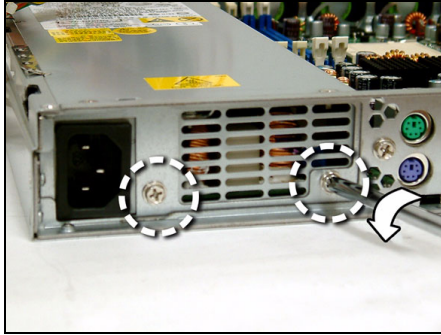
Case	SW1 (DLYD_START)	SW2 (RMT_START)	Motor Spin Function
1	OFF	OFF	Motor spins up at D.C. power on.
2*	ON	OFF	Motor spins up at D.C. power on after a delay in seconds 12 times** the value of the numeric SEL_ID for the SCSI device.
3	OFF	ON	Motor spins up only when START UNIT command is received.
4	ON	ON	Reserved. SCSI devices not implementing this option shall execute power control according to the rules of case 3.
<p>Note:</p> <p>*Case 2 is the default setting.</p> <p>**This value may be reduced by SCSI device supplies to reflect the worst-case time duration of peak current drains at the 12 V.D.C or 5 V.D.C source or both during motor spin up. In no case should the delay exceed 12 s.</p>			

SW3 & SW4 HDD ID Selection Switch

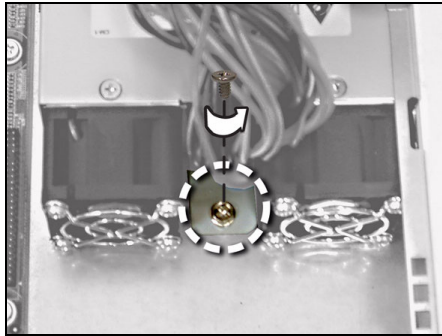
Case	SW3	SW4	ID Sequence (left to right in front view)
1	OFF	OFF	SCSI ID# 0, 1, 2, 3
2*	ON	OFF	SCSI ID#4, 5, 6, 7 (Please notice that, in this case, HDD SCSI ID#7 will conflict with SCSI controller ID)
3	OFF	ON	SCSI ID#8, 9, 10, 11
4	ON	ON	SCSI ID#12, 13, 14, 15
Note: *Case 2 is not a recommended selection because SCSI HDD ID#7 will conflict with SCSI controller ID in such case.			

3.8 Replacing the Power Supply

1. Remove the two screws that secure the power supply to the chassis.



2. Remove the screw that secures the fan assembly to the chassis



Appendix I: BIOS Differences

The BIOS of B2881 is similar to the BIOS of S2881. There is only one menu different. You may refer to the attached motherboard manual for the complete BIOS information. The differences between B2881 and S2881 is on the “Advanced/Hardware Health Information” menu. See the following for the differences.

B2881 Advanced/Hardware Health Information

BIOS Setup Utility	
Advanced	
Hardware Health Event Monitoring	To Monitor Board's Voltages
CPU0 Temperature	xxxxxx
CPU1 Temperature	xxxxxx
System Temperature	xxxxxx
FAN1 Speed	xxxxxx
FAN2 Speed	xxxxxx
FAN3 Speed	xxxxxx
FAN4 Speed	xxxxxx
FAN5 Speed	xxxxxx
►Mainboard Voltages Report	[Enabled]
Auto FAN2,6,9 Power Control	[30% Duty Cycle]
PWM Minimal Duty Cycle	[Disabled]
Chassis Intrusion Detect	
←→: Select Menu ↑↓: Select Item Enter: Go to Sub Screen F1: General Help F10: Save and Exit ESC; Exit	

S2881 Advanced/Hardware Health Information

BIOS Setup Utility	
Advanced	
Hardware Health Event Monitoring	To Monitor Board's Voltages
CPU0 Temperature	xxxxxx
CPU1 Temperature	xxxxxx
System Temperature	xxxxxx
FAN1 Speed	Not Monitored
FAN2 Speed	xxxxxx
FAN3 Speed	xxxxxx
FAN4 Speed	xxxxxx
FAN5 Speed	Not Monitored
FAN6 Speed	xxxxxx
FAN7 Speed	Not Monitored
FAN8 Speed	xxxxxx
FAN9 Speed	xxxxxx
►Mainboard Voltages Report	
Chassis Intrusion Detect	[Disabled]
←→: Select Menu ↑↓: Select Item Enter: Go to Sub Screen F1: General Help F10: Save and Exit ESC; Exit	

Table of Differences

S2881	B2881
FAN1 Speed, FAN2 Speed FAN3 Speed, FAN4 Speed FAN5 Speed, FAN6 Speed FAN7 Speed, FAN8 Speed FAN9 Speed	FAN1 Speed, FAN2 Speed FAN3 Speed, FAN4 Speed FAN5 Speed

Appendix II: Cable Connection Tables

SATA Cable

Table 1: B2881G24S4-LC Model

HDD Drive	Connect to	Motherboard
HDD1	→	SATA0
HDD2	→	SATA1
HDD3	→	SATA2
HDD4	→	SATA3

FAN Cable

Table 2: System Fan to M1012 Adapter Board

System Fan	Connect to	M1012
Fan 1	→	J6 Fan Connector
Fan 2	→	J10 Fan Connector
Fan 3	→	J11 Fan Connector
Fan 4	→	J9 Fan Connector
Fan 5	→	J5 Fan Connector

Table 3: M1012 Adapter Board to Motherboard

M1012	Connect to	Motherboard Fan
J13 Fan 1 cable	→	Fan 8
J13 Fan 2 cable	→	Fan 9
J14 Fan 3 cable	→	Fan 3
J14 Fan 4 cable	→	Fan 4
J14 Fan 5 cable	→	Fan 2
J8 PWM cable	→	Fan 6

Power Supply Cable

Table 4: Power Supply to Motherboard

Power Supply	Connect to	Motherboard
P1 24-pin power cable	→	J41 24-pin connector
P2 8-pin power cable	→	J26 8-pin connector

Table 5: Power Supply to M1012 Adapter Board

Power Supply	Connect to	M1012
P3 4-pin power cable	→	PW2 4-pin connector

The Other Cable

Table 6: M1012 Adapter Board to Motherboard

M1012	Connect to	Moherboard
J3 LAN1 LED cable	→	J73
J3 LAN2 LED cable	→	J75

Table 7: M1003 Front Panel Control Board Related Cable

M1003 J1 USB connector	→	Motherboard J25
M1003 J2 connector	→	M1012 J2 connector

Table 8: Chassis Intrusion Cable

Chassis intrusion switch	→	Motherboard J86 Pin 17 & Pin 18
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Table 9: FDD Related Cable (Option)

Motherboard FDD connector	→	FDD Backplane
Power Supply P5	→	FDD Backplane

Table 10: CD-ROM Related Cable (Option)

Motherboard IDES connector	→	CD-ROM Backplane
M1012 J19 power connector	→	CD-ROM Backplane

Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website (www.tyan.com) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com

Please feel free to contact us directly for this service at tech-support@tyan.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>

3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: alt.comp.periphs.main-board.TYAN

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

NOTE: A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you.

Transport GT24, B2881 Service Engineer's Manual v1.0
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